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16. OBSERVATIONS ON THE BREEDING GROUND AND DEVELOPMENT OF THE CHILKA MULLET *LIZA MACROLEPIS* (SMITH)

Liza macrolepis, known locally as 'Dangla', forms a commercial fishery in Chilka Lake. In growth and size the fish can be grouped among the larger mullets. The present observations on the breeding ground of 'Dangla' would therefore be of interest from the point of view of both conservation and development of the fishery of this species.

The occurrence of 'Dangla' eggs was first noted in the tow net collections made on 27th November 1964 at about 10.30 hrs. on the right bank of the outer channel near lakemouth. An examination of the eggs revealed the characteristic large oil globule and unsegmented yolk. Since these are important features of mullet eggs and as mature specimens of *L. macrolepis* and *M. cephalus* occurred predominantly in the catches of outer channel during this period an attempt was made to collect the running ovary of these species.

On 28.xi.64 at about 04.00 hours it was possible to collect the oozing ova from a specimen of *L. macrolepis* captured at lakemouth. The oil globule was already formed in the oozing ova and they resembled in appearance and other details the eggs in tow net collections made on 27.xi.64. The eggs appeared to swell very little after fertilisation. There is, thus, little doubt that the 'tow net eggs' belonged to *L. macrolepis*. As eggs in the early and late stages of development occurred at lakemouth as well as up to 2 miles interior of outer channel it may be assumed that lakemouth and inshore areas of sea proximal of lakemouth form the breeding zone of this species. The findings of Jhingran (1958) and Jhingran *et al.* (1963) on the seaward migration of 'Dangla' and its likely breeding ground near lakemouth were thus confirmed.

The present findings indicate that 'Dangla' spawn at about midnight. The total period of embryonic development may be around 26 or 27

hours. The hatching, like spawning, appears to be from a couple of hours before midnight to two or three hours after midnight. The developing eggs collected from plankton were straw coloured and unsculptured, with the characteristic single, large oil globule. The egg measured 0·677 to 0·732 mm. and the oil globule 0·292 to 0·347 mm. The newly hatched larva measures 1·519 to 1·556 mm. The myotomes are 24, the trunk myotomes forming 11 and tail myotomes 13 including the unsegmented terminal mesoderm. The larvae survived up to six days in the laboratory and the six-day old larva measured 2·342 mm.

The 'Dangla' fishery of Chilka Lake showed considerable fluctuations in the range 27-299 m. tonnes (Jhingran & Natarajan 1965) during 1957-1965 period and this is, in no small measure, due to vagaries in recruitment. As recruitment and egg production are related and as the breeding of 'Dangla' is around the lakemouth and inshore areas of sea proximal to lakemouth, it is to be emphasized that breeders should not be unduly exploited, as done now, particularly in the outer channel during November-January.

We are grateful to Dr. B. S. Bhimachar for evincing keen interest in these investigations and Dr. V. G. Jhingran for his valuable suggestions.

CENTRAL INLAND FISHERIES RESEARCH SUB-STATION[1], HAZARIBAGH,
January 4, 1969.

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17. OBSERVATIONS ON THE FOOD OF YOUNG *HILSA ILISHA* (HAM.) OF THE HOOGHLY ESTUARINE SYSTEM

(With a text-figure)

INTRODUCTION

The 'Indian Shad' *Hilsa ilisha* (Hamilton), forms a rich commercial fishery in the Hooghly estuary. Although considerable knowledge has been gained by various workers on the different aspects of the biology

[1]The investigations were carried out under the auspices of the Chilka Investigation Unit of Central Inland Fisheries Research Institute, Balugaon, Puri (Dist.), Orissa.